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TEL. 04 73 71 74 20
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Les auteurs / The authors

Antoine Cazals

Doctorant / PhD Student

Clermont Université, Université d'Auvergne, CNRS, UMR 6587, CERDI, F-63009 Clermont Fd, France.

Email : antoine.cazals@gmail.com

Alexandre Sauquet

Doctorant / PhD Student

Clermont Université, Université d'Auvergne, CNRS, UMR 6587, CERDI, F-63009 Clermont Fd, France.

Email : alexandre.sauquet@gmail.com

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Résumé / Abstract

Is there a strategically beneficial time for political leaders to make international environmental commitments? Based on the political cycles theory we argue that leaders have incentives to delay costly ratification of international environmental agreements to the post-electoral period. However, the cost of participating in these agreements are often lower for developing countries, and they may benefit from indirect gains, which may make them more prone to ratifying in the pre-electoral period. These hypotheses are empirically assessed by studying the ratification process of 48 global environmental agreements censused in the ENTRI database from 1976 to 1999. We use a duration model in which time is measured on a daily basis, enabling us to precisely identify pre- and post-electoral periods – a significant challenge in political cycles studies. Our investigation reveals the existence of political ratification cycles that are of substantial magnitude and non-linear over the pre- and post-electoral years.

Mots clés / Keywords : Smallholder farming, Social learning, Organic farming, Technical efficiency, Environmental efficiency, China.

Codes JEL / JEL codes : Q12, Q57, D83, D24, O53

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1. Introduction

The provision of an environmental public good with transboundary externalities is subject to free riding. Cooperation among countries is thus necessary and requires the formation of an International Environmental Agreement (IEA). Given the absence of a supra-national authority, IEAs need to be self-enforcing, i.e., profitable and stable (Carraro and Siniscalco, 1993; Barrett, 1994). Barrett (1994) shows that in a basic setting the possible improvement over a situation without cooperation is limited. This has engendered a large volume of literature aimed at seeking to understand the determinants of country contributions and to find the best design for IEAs (see Wagner, 2002; Barrett, 2005; Finus and Pintassilgo, 2013; Eichner and Pethig, 2013, for reviews and recent developments).

Once the proper design for an IEA has been found and the treaty text drafted, the key step is to obtain the participation of countries. Participation is sealed through ratification, which is a political decision resulting from a two-level game (Putnam, 1988; Barrett, 1998). At the first level, there are negotiations among country representatives. While no influence of foreign peers is observed by Beron et al. (2003) in the Montreal Protocol ratification process, Murdoch et al. (2003) find that a country is positively influenced by its polluting neighbors in the case of the Helsinki Protocol. In a study of 255 IEAs, Bernauer et al. (2010) find evidence that the ratification of countries from the same region increases the probability to ratify an IEA. Finally, Sauquet (2012) highlights that, for the case of the Kyoto Protocol, countries are positively influenced by their trade and investment partners.[1]

The second level of the game involves negotiations at the national level between domestic groups and the political leader. Citizen preferences have been shown to depend on revenue level and the number of green NGOs (Fredriksson et al., 2007). In addition, the possibility of expressing preferences is determined by a country's democracy level (Congleton, 1992; Fredriksson and Gaston, 2000; Neumayer, 2002a). Furthermore, the obligations contained in an IEA are suspected to constrain the behavior of polluting goods producers. Therefore the participation is expected to be inversely related to the presence of brown lobbies and (possibly) trade open-

[1] Of course, the design of the IEA influences the presence and nature of interactions, as shown in the articles we refer to.

ness, even if supporting evidence is mitigated (Fredriksson and Gaston, 1999; Neumayer, 2002b; Fredriksson et al., 2007).

Nonetheless, whether domestic (lobbies, citizens) or international (foreign peers), these actors do not directly influence the participation decision. They are only groups, whose preferences are considered when the political leader makes his or her decision. Furthermore, theory and evidence teach us that the decisions of a leader are strongly influenced by his or her reelection prospects (Nordhaus, 1975; Brender and Drazen, 2005; Shi and Svensson, 2006; Drazen and Eslava, 2010, among others). Thus, we suspect a leader's propensity to commit to environmental protection varies over the term, especially prior to and after elections.

To understand the relationship between ratification decisions and the electoral calendar, we develop an analytical framework reviewing the costs and benefits of the participation in an IEA. The two hypotheses drawn are empirically tested by studying the ratification process of 48 global environmental agreements censused in the ENTRI database from 1976 to 1999. We estimate a duration model in which time is measured on a daily basis and show that the electoral schedule does have an effect on a country's probability of ratifying an IEA. Furthermore, we show that this effect is heterogenous among countries and over pre- and post-electoral years.

The contribution of this paper is twofold. First, while most of the literature examines how a democratic leader is influenced by the interest or action of other actors, we examine how a leader deals with his or her own constraints, that is to say, the electoral calendar. Answering this question enables us to identify when a leader is more prone to make environmental contributions, and may thus help to create better conditions for the success of IEAs. Second, unlike previous studies in this field, we offer to measure time on a daily basis. Indeed, the Cox model allows us to do so and therefore to exploit precise election and ratification dates to build our variables of interest, i.e., pre- and post-election dummies. Hence, we avoid traditional weaknesses, such as poor identification of pre- and post-electoral periods (Akhmedov and Zhuravskaya, 2004; Brender and Drazen, 2005; Shi and Svensson, 2006). The empirical strategy proposed could be replicated and is suitable to study a wide range of questions, in particular those involving policymaker decisions or important events.

Section 2 discusses the theoretical arguments underlying our hypotheses. Our empirical strategy is developed in Section 3 and results are presented in Sections 4 and 5. Concluding

remarks are presented in Section 6.

2. Understanding the effects of the electoral calendar

The idea that electoral calendar may impact a leader's behavior and decisions is far from new. As early as the 1970's, Nordhaus (1975) argued that incumbents are likely to boost economic performance in the pre-electoral period in order to maximize their chances of reelection. However, empirically, scholars do not find an increase of aggregate economic variables the year before an election (Alesina et al., 1997; Drazen, 2000), and therefore cast doubt on the existence of political business cycles. Indeed, as Shi and Svensson (2003) argue, policymakers do not exert direct control on variables, such as growth or employment, and these global targets are not likely to have important elasticity to economic stimuli in the short term. By contrast, incumbents can manipulate fiscal instruments to a greater extent. Thus, academic researchers have thoroughly studied the political timing of the fiscal tool manipulation, also known as political budget cycles.

Regarding international environmental cooperation, that is sealed through ratification, a political leader can also choose to act in his or her best interest according to the timing of elections. This positively answers the question of whether or not leaders are able to adopt strategic timing ratification behavior. Examining the effect of the electoral calendar on IEA participation, the following analytical framework explains "why" and "how". First, we argue that participation in an environmental treaty can be seen as a costly and thus unpopular policy. Second, we discuss how incentives for developing and industrialized countries differ.

2.1. IEA purposes and implied costs

The aim of an IEA is to alter the behavior of agents in order to reduce pollution or the extraction level of natural resources. From this perspective, participation in an environmental agreement is often perceived as a constraint imposed on domestic economic agents and is sometimes assimilated to the adoption of a new tax (Davies and Naughton, 2013). Moreover, scholars have shown that increasing taxes or creating a new tax before an election are scarce events. Such a policy decision usually occurs the year following a major election (Mikesell, 1978; Nelson, 2000; Foremny and Riedel, 2012). Indeed, this is the period farthest from the next election and

during which the leader is expected to enjoy a "honeymoon period" with strong support and muted opposition (Nordhaus, 1989; Marra et al., 1990; Haggard and Webb, 1993).[2]

The industrial sector is likely to be the most strongly affected by this new constraint, and thus, likely to be its fiercest opponent. Incumbents seeking reelection might be reluctant to displease industries shortly before elections for two reasons. First, Grossman and Helpman (2002) explain that industry interests are often represented by powerful and influential lobbies that provide strong and vital political support through campaign financing.[3] The authors point out that during the 2000 US presidential election, industrial lobbies offered more than 80 million dollars to the two major political parties, which represents one third of all lobby contributions to US electoral campaign, and more than 15% of its total cost. Second, industrial companies may employ thousands of workers in a country. A new tax or regulation that imposes production constraints may thus threaten jobs as companies seek to minimize costs. The turmoil that might ensue can be detrimental to the incumbent.[4] Obviously, it is easier for a leader to deal with potential turmoil once reelected to office rather than during the electoral campaign, when his or her bargaining power may be diminished (Matschke, 2003).

Furthermore, even smaller groups may hold substantial weight on policy-making. For example, fishermen are able to block harbors and related activities, farmers can mediatize shocking public wastage of food, airline employees can seriously impede air traffic (see Osborn, 2003; Clark, 2013, for examples).[5] The media coverage of such events offers these groups a national audience and makes politicians careful in designing regulations affecting them. Thus, participation in environmental treaties does not need to be the main concern of ordinary voters to imply strategic behavior from leaders. We argue that the negative signal potentially sent by the clash with these groups is likely to persuade incumbents to delay ratification from the campaign or pre-campaign period to a less critical one, that is, the post-election period.

In summary, IEA participation can impose costs to a country and can be detrimental to

[2] In the specific case of the environment, Ashworth et al. (2006) show that the adoption of environmental taxes is delayed from electoral years by Flemish municipalities.

[3] Although this view is widely accepted Ansolabehere et al. (2003) present some dissonant elements.

[4] Moreover, concerned workers may hold leaders accountable for not having managed to preserve jobs. This can ultimately have a detrimental effect on voter perception of the incumbent's performance and ability, reducing his or her reelection prospects.

[5] In particular, fishing-related treaties are numerous and fishers are directly affected by species protection policies, such as restrictions, quotas and prohibition, or even regulations and norms regarding nets or vessels.

a leader's reelection if these costs directly affect a large share of the electorate. However, the dissatisfaction of a small group can also have great impact. This may favor status quo, especially when elections approach. Conversely, once the election is over, the pressure on leaders is lower, and they may even give the pretext of international pressure to adopt environmental standards that would be difficult to implement nationally (Putnam, 1988). Furthermore, participation is expected to occur when the distance to the next election is the greatest.

Thus, the first and baseline assumption to test is whether there is a statistically significant higher probability to ratify an IEA during the period following a major election.

Hypothesis 1. *The probability of ratifying an IEA is greater in the post-electoral period.*

2.2. Developing country status and net benefits of IEA participation

As pointed in the previous section, environmental commitments are likely to generate costs for countries. Consequently, developing country leaders called upon their "right to development", which is explicitly recognized in the 1992 Rio declaration, and asked to adopt the principle of "common but differentiated responsibility" in the 1992 United Nations Framework Convention on Climate Change. Indeed, it would be unfair for developing countries to pay for a situation for which, in some cases, they share little responsibility. They also argued that they are facing other challenges of greater importance, such the alleviation of poverty. When faced with a choice between ratifying a constraining IEA or not, even an environment-friendly leader is likely to encounter domestic opposition, such as citizen protests or parliamentary obstruction. Putnam (1988) explains that this situation can lead to an involuntary defection. Moreover, a strategic leader may anticipate a case of involuntary defection and negotiates in advance for softer commitments. As a result, many IEAs distinguish between the obligations of developed and developing countries (Stone, 2004).

Preferential treatment for poorer countries can take various forms and benefits can eventually exceed the (reduced) costs of participation. Several examples of direct participation benefits can be found among the most-famous IEAs. For example, developing countries who ratify the Kyoto Protocol can host clean development mechanism projects which generate certified emission reduction credits for developed countries. These projects are also intended to promote sustainable development in developing countries, through the financing of new projects, and the

allied technological transfers that might thus ensue. In the Convention on Biological Diversity, or the REDD+ mechanism, financial inflows are expected, in particular through the development of win-win solutions, promoting both economic development and environment conservation, such as payment for environmental services or conditional cash transfers (OCDE, 2013). A last example is the Basel Convention on hazardous waste shipments that aims at providing environmental protection and heritage conservation for developing countries through the limitation of hazardous waste exports. Since costs are markedly reduced and that participation can produce benefits, ratification can be seen as a welcome reform. Thus, it can drive an incumbent to adopt IEAs in the run-up period to an election, in order to facilitate his or her reelection.

Not all IEA participation produces direct net benefits for developing countries, however, there can also be indirect benefits. Indeed, a second aspect affecting a leader's reelection prospects is the influence of the international community. Developing country leaders may buy international support through vote-trading, which can be defined as trading support on one issue for support on another.[6] A recent and important literature on vote-trading shows how developing countries can trade their votes at the UN Assembly or Council, notably, with some wealthier countries, such as the US or G7 countries, for obtaining more foreign aid or economic and financial programs (Kuziemko and Werker, 2006; Dreher et al., 2008). Interestingly, Rose and Spiegel (2009) and Schulze and Tosun (2013) show that IEA participation is used to get support on other issues, such as access to market, credit, and aid.

Leaders of developing countries can trade their participation for two kinds of benefits affecting their reelection prospects. First, through ratification, they can bargain for policy concessions on topics likely to boost economic and fiscal performance. Foreign assistance is a prominent kind of policy concession on which leaders are likely to bargain (De Mesquita and Smith, 2009; Faye and Niehaus, 2012). Indeed, foreign aid allows the leader to play with fiscal tools to a greater extent, which is particularly relevant since the political budget cycle literature shows that fiscal policy is effectively used by developing country incumbents for reinforcing their chances of reelection. Interestingly, Moreno-Dodson et al. (2012) show that the more aid a leader receives the greater are his or her chances of staying in office. Incentives for using this "ratification-

[6] Usually vote-trading describes a transaction involving a vote; in our case there is no vote directly at stake but rather agreement ratification and international cooperation.

trading" mechanism are therefore greatest in pre-electoral periods. Furthermore, as some aid programs are conditional to "good behavior", it stands to reason that developing country leaders may be eager to improve their image in the run-up period and use IEA ratification to achieve this. In addition, the leader of a developing country may attempt to buy credibility and support from developed country leaders', by ratifying the agreement they are willing to build (Kelemen and Vogel, 2010; Schulze and Tosun, 2013). This bargaining mechanism may be of first importance during electoral periods. Indeed, bad international press and relations are likely to be detrimental for an incumbent running a competitive election.

As a result, the costs of participation may be prominent for OECD countries, leading policy-makers to delay ratification until the post-electoral period. Instead, the cost of IEA participation may be lower and both direct and indirect benefits may be substantial for developing countries. Consequently, we expect leaders of developing countries to ratify IEAs in the pre-electoral period.

Hypothesis 2. *The probability of ratifying an IEA is greater for a developing country during the pre-electoral period .*

3. Identifying the effects of the electoral calendar

3.1. Sample selection

To evaluate how ratification timing can be influenced by the electoral calendar, we lead a worldwide study which allows us to fully explore the influence of heterogeneity among countries on this question. We use the ENTRI database and are only interested in treaties with a global scope.[7] Bilateral and regional agreements are excluded from the analysis since they are not open for ratification to all countries. We also exclude amendments. Indeed, on numerous occasions, amendments are not subject to explicit ratification. Rather, they must be denounced before a specific deadline if a country does not want to be bound to them, as with the examples presented in Descamps et al. (2008). The ratification date for an amendment provided by the ENTRI database is the aforementioned specific deadline, which is common to all countries.

[7]The Environmental Treaties and Resources Indicators' database is provided by the joint efforts of SEDAC (NASA) and CIESIN (Columbia University) with contributions by IUCN and UNEP, among others. The advantage of using the ENTRI database is that it is built on several existing sources of information and contains a large set of information concerning these treaties, in particular the occurrence of succession, which was not available in alternative databases.

There would be no point in studying the effect of the electoral cycle based on this date. We end up with a sample of 48 treaties for the period 1976 to 1999.[8] The 48 IEAs included in our sample concern subjects, such as air and water pollution, biodiversity, hazardous and nuclear wastes and fishing. Table 1 shows that 33 agreements entered into force from 1978 to 1998, and on average 29 countries within our 98 country sample are members of these treaties at the end of the study. A list providing each treaty name, along with its year of entry into force and the number of countries from our sample that had (already) ratified in 1999 can be found Appendix A.

Table 1: Main features of IEAs

	Obs.	mean	min	max	med
Year of opening for ratification	48	1987	1976	1999	1989
Year of entry into force	33	1990	1978	1998	1992
Nb. of parties in 1999 (within our 98 country sample)	48	29	0	84	26

Furthermore, it is only relevant to study the effect of the electoral calendar in cases where elections are free and fair. If the incumbent is a dictator and certain to stay in office, he has no strategic incentive to manipulate the timing of reforms (Brender and Drazen, 2005). We use the Executive and Legislative Indices of Electoral Competitiveness (EIEC and LIEC, respectively) provided by the Database of Political Institutions (DPI) and consider an election as "free and fair" when its index, ranging from 0 to 7, is above 5. We focus on the most relevant national election according to the country regime. Namely, we rely on presidential ballots for presidential systems and on legislative elections for parliamentary and mixed regimes.[9] As shown in Table 2 our sample of 98 countries is constituted from 23 OECD countries and 75 developing countries.[10] Presidential systems are predominantly found in developing countries. A list of countries along

[8]The choice of the period studied is constrained by the availability of data. Election dates are not available before 1975 and the ENTRI database ends in 1999.

[9]This methodological approach is standard in the literature (Shi and Svensson, 2006; Brender and Drazen, 2013, for instance). Regimes information is extracted from the "System" variable in DPI. We classify mixed and parliamentary regimes together since they are not characterized by a strong separation between executive and legislative powers, as opposed to countries with presidential systems (Persson and Tabellini, 2003).

[10]Some are obviously democratic during subperiods only and so only enter the study during these subperiods.

with their respective political regime in 1999, is provided in Appendix B.

Table 2: Development status and political regime in 1999

	Pres.		Parl.		Total	
PED	54	(72%)	21	(28%)	75	(100%)
OCDE	3	(13%)	20	(87%)	23	(100%)
Total	57	(58%)	41	(42%)	98	(100%)

3.2. Model specification

The ratification process can be seen as a failure time process; units (*countries*) are observed from a specific date (*the opening of the treaty to ratification*), survive for some length of time, and then fail (*ratify*) or are censored (*have not yet ratified in 1999*). The time dependence and censoring inherent to this kind of process (Kalbfleisch and Prentice, 2002) are taken into account using a duration model.[11] We use a Cox proportional hazard model, since it has the advantage that the functional form of the baseline hazard can be left unspecified.[12]

Our empirical specification is as follows:

$$h(t|\mathbf{x_j}) = h_{0a}(t)\alpha_c exp(\sum_{k=1}^{K} x_{kj}\beta_k), \tag{1}$$

where t is the time scale measured in days, and j the unit of observation. The hazard rate $h(t|\mathbf{x_j})$ is the rate at which ratification occurs, given it has not happened until time t (Kiefer, 1988). It depends on the baseline hazard $h_0(t)$ which takes into account time dependence and is common to all countries. We study 48 treaties dealing with different environmental issues. It is unlikely that the measures against climate change are subjected to the same ratification process dynamics as the reduction of hazardous waste exports, or the regulation of fishing, for example. This assumption is relaxed by allowing the baseline hazard to differ by treaty a.

We control for unobserved heterogeneity by introducing a frailty parameter α shared at the country level c, which can be seen as a random country-specific effect, while several independent

[11] Duration analysis has also been used to study the determinants of IEAs ratification by Fredriksson and Gaston (2000), Neumayer (2002b), Fredriksson et al. (2007), and Sauquet (2012). However, to our knowledge this is the first attempt to use such a model in a multi-treaty setting.

[12] And, as we will see, stratified. This methodology is superior to the use of a logit model with time splines as proposed by Beck (1998) and Carter and Signorino (2010) for several reasons, as explained in Section 3.3.

variables x_k are introduced to capture observed heterogeneity.[13] The model presented in equation 1 is expressed in a Proportional Hazard (PH) metric form, which implies that we have the possibility of reporting regression results in the form of hazard ratios, that are equal to $\exp(\beta)$ and must be compared to one. For the case of dummy variables, they can be defined as the ratio of the hazard of an observation with the characteristic A, e.g., being in the post-electoral period, on the hazard of an observation not having this characteristic. The extension for continuous variables is straightforward, it is the ratio of the hazards for a 1-unit change in the corresponding covariate (Cleves et al., 2010, p.131).

The matrix of K independent variables includes election dummies, which are our variables of interest. They indicate whether the observation is before or after an election, as explained in the following paragraphs. It also contains three standard independent variables; the GDP per capita of countries in thousand constant US $2000 (the "GDPpc" variable), the democracy level ("Polity") and a measure of trade openness ("Trade").[14] Both revenue and democracy levels are expected to have a positive effect on commitment whereas theory goes both ways for trade openness (see Neumayer, 2002b).[15] Lastly, ratification days are provided by the ENTRI database and the election dates (day/month/year) come from the Institutions and Elections Project (IAEP). Measuring time in days allows us to fully exploit the information contains by these dates.

It is worth noting that our independent variables vary through time. Let us illustrate how this translates to our database. Suppose an observed failure time at Day 525 and an independent variable that changes at the end of the first year (Day 365), such as the GDP per capita of the country. As explained by Zhou (2001), this is equivalent to two independent observations: one started at zero but censored at 365; and another started at 365, and observed to fail at 525. Information concerning a given country-treaty pair will therefore be split into several independent

[13] In "coxme", the R routine used to estimate our model, the frailties are estimated using penalized likelihood for computational facility. See Therneau et al. (2003) for more details. Frailties are preferred to individual dummies since Allison (2002) and Greene (2004) show that it can bias the estimator. However, introducing individual fixed effects does not qualitatively change the results (available upon request).

[14] Revenue level and trade openness measures are taken from the World Bank Development Indicators database. The democracy level is taken from Polity IV.

[15] We deliberately limit our set of control variables for several reasons. First, few variables in the literature are found to be robust in explaining environmental cooperation. Second, an additional variable should be chosen very carefully since our model may be severely biased by missing observations, especially if they match the ratification year. Finally, as election dates are strongly exogenous, we do not need to worry about an omitted variable bias.

observations.

In our database, January 1, 1976 is considered as day 0.[16] Then, each treaty enters the analysis on January 1 of the year the treaty is open to ratification. Each observation ends when the value of a covariate changes or when the country ratifies the treaty. In this latter case, the observation ends at the ratification date. As ratification date, we consider the date for which one of the following instruments has been deposed: accession, acceptance/approval, or ratification.[17]

We construct time dummies to determine the effect of the electoral calendar. Since the literature on political cycles usually studies effects that occur within one year before or after an election, we first build two pre- or post-electoral year dummies. "Pre_365" ("Post_365") equals 1 on the 365 days preceding (following) election day, and 0 otherwise. These two dummy variables are used to present baseline results. However, we have reason to believe that a leader's behavior is not homogenous over the year preceeding/following the election.

Firstly, there is a latency or 'transition' period following a major national election, that may last several weeks or months. This is due to several factors. First, the actual investiture date of the leader seldom matches the election day.[18] Second, in some countries presidential elections are followed several weeks later by legislative elections. Conversely, in many parliamentary countries legislative elections are only the first step of the executive branch renewal process. Government bodies are only fully functional once both executive and legislative powers are renewed, and the gap between both may be significant. Last but not least, once each power is appointed, a short period may be observed for discussing, negotiating, organizing and considering the implementation of future policies. Consequently, the existence of post-electoral cycles in IEA ratification is expected to be stronger in the second semester after the election, once the transition period is over.

Secondly, relying on a strict interpretation of our theoretical mechanisms, leaders of developing countries should strategically minimize the distance between the ratification and the upcoming election. We may thus expect them to exhibit the highest cooperative behavior in the

[16] Indeed, election dates are available only from 1975, so to determine whether or not the period under study is post-electoral, the analysis must start on January 1, 1976.

[17] Note that if a country deposes withdrawal or succession instruments, the country-treaty pair is excluded from the analysis.

[18] For instance, Barack Obama was elected for the first time on November 4, 2008 but took office only 11 weeks later, on January 20, 2009.

six months preceding the ballot.

For those reasons, we offer a more precise analysis of a leader's strategic behavior by splitting both the pre- and post-electoral years into two semesters. "Pre_S1" takes the value 1 during the six months preceding the election, i.e., when the distance to the next election is equal to or lower than 182 days, and 0 otherwise. Similarly, "Pre_S2" indicates the first six-month period of the pre-electoral year, i.e., the second semester before the ballot. It equals 1 between the 365^{th} and 182^{nd} day before an election. "Post_S1" and "Post_S2" are constructed symmetrically. "Post_S1" is intended to control for the transition period hypothesis and "Post_S2" to capture the post-electoral effect. The estimated equation is as such:

$$\begin{aligned} h(t|\mathbf{x_j}) &= h_{0a}(t)\alpha_c exp(\beta_1 pre\_S1_j + \beta_2 pre\_S2_j + \beta_3 post\_S1_j + \beta_4 post\_S2_j \\ &\quad + \beta_5 GDPpc_j + \beta_6 Polity_j + \beta_7 Trade_j), \end{aligned} \tag{2}$$

Finally, notice that the construction of the four six-month dummies implies a change in the value of covariates every 6 months before and after an election.[19]

3.3. Methodological contribution

To analyze the realization of an event such as the ratification of a treaty, traditional logit models are not suitable since they do not take into account time dependence, leading to violation of the assumption of independence among observations. Beck (1998) and Carter and Signorino (2010) highlight this point and suggest tackling time dependence in the logit model through the introduction of time dummies or time splines. We estimate a Cox proportional hazard model, since it improves this empirical strategy in two ways.

First, it allows us to take into account time dependence and to achieve it without imposing any inflexible functional form on the effect of time. Moreover, through stratification, the baseline hazard is allowed to vary among treaties. In addition, this methodology allows us to account for country-specific effects through the introduction of a frailty term shared at the country level.

[19] To clearly demonstrate the implications for the database construction and to allow a better understanding of our empirical contribution, we have developed an example in Appendix C.

Second and most important, while a logit model would have implied using yearly observations, the Cox model allows to measure the time continuously (in days, in our case). This is particularly important for our question of interest. Indeed, in the traditional analysis of political cycles, the architecture of the data leads researchers to consider the calendar year of election as the electoral year and the preceding and following calendar years as pre-/post-election periods. Yet, if an election occurs on January 5, for example, most of the "election" year is, in reality, a post-electoral period. This "poor identification" of pre- and post-electoral periods has been recognized in many leading articles on political cycles (Akhmedov and Zhuravskaya, 2004; Brender and Drazen, 2005; Shi and Svensson, 2006). Through our analysis, and as suggested in the previous section, we avoid this bias and are able to truly distinguish between pre- and post-election periods. We illustrate this point and present examples of identification gains allowed by the use of the Cox model in Figure 1.

In Case 1, Figure 1, we see that the conventional dummy does not capture a ratification occurring 8 months after an election as a post-electoral year event. In Case 2, the participation decision happening 23 months after an election is (wrongly) considered as still post-electoral. This has very little relevance, especially for countries like the US, which have 4-year terms. In Case 3, we see that we are able to isolate the investiture period by splitting the post-electoral dummy into two semesters and thereby capture true post-electoral behavior.

[insert Figure 1 here]

4. Baseline results

We now empirically assess whether ratification decisions are subject to strategic timing on the part of leaders and test for the hypotheses developed in Section 2. We run regressions on a dataset of 98 democratic countries that have the choice to commit to 48 IEAs during the period 1976-1999. We estimate a Cox proportional hazard model and report hazard ratios. As explained in Section 3.2, a hazard ratio above 1 means that an increase in the covariate induces an increase of the hazard.

We present our baseline results in Table 3. In columns (1) to (3), we introduce dummy variables taking the value of 1 for one year before/after an election. We then run more precise

estimates, by using pre- and post-election semesters dummies as specified in equation 2, and present results in columns (4) to (6). The structure within these two series of regressions is identical. We first report estimates made on the whole sample that we then split into OECD countries on one hand and developing countries on the other hand.[20]

[insert table 3 here]

Column (1) reveals that the ratification hazard is higher in the pre-electoral year. In accordance with our expectations, this pre-electoral cycle is found to be actually driven by the group of developing countries, column (3). According to the baseline regression column (2), OECD members do not exhibit any significant pre- or post-electoral cycles. This partly rejects our first hypothesis. Yet, the post-electoral year coefficient is positive and the associated p-value (0.12) only slightly exceeds the usual significance threshold of 10 percent. We attribute this mixed evidence to the phenomenon raised in Section 3.3. Namely, the first period just after elections is likely to be a transition period characterized by a low production rate of laws and policies. The examination of Table 3's last three columns supports this view and brings back together our theoretical predictions and empirical investigation.

Columns (5) and (6) exhibit strong effects, both in magnitude and significance. OECD leaders tend to strategically delay ratification to the second post-election semester; the hazard increases by 31%. By contrast, we do not observe any significant cycle occurring during the first semester, which is consistent with the fact that political institutions need time to renew, re-organize, and become effective again. For developing countries we see that the ratification rate increases in the pre-electoral period and is even concentrated in the six months preceding elections. This suggests that leaders of developing countries tend to ratify closer to elections in order to maximize the positive impact (in terms of reelection prospects) they may obtain from their participation. Consequently, these results support the theoretical mechanisms previously developed and Hypotheses 1 and 2 are not rejected.

Finally, all of our control variables affect international cooperation in the direction expected, but none exhibits systematic effects. Trade openness never becomes significant. Democracy

[20]For brevity, we only present results from the full model, taking into account both country and treaty heterogeneity that we believe to be more conservative and rigorous. Not controlling for these heterogeneities does not, however, qualitatively affect our results. These results are not reported but are available upon request.

increases ratification likelihood over the whole sample but this effect disappears once the sample is split. This may indicate a substantial polarization of the two country groups in this respect. Only GDP per capita offers more stable results. Wealthier countries are more willing to participate in environmental agreements. This result is, however, not significant for the OECD group suggesting a positive impact of the revenue level up to certain threshold. To provide a better picture, a GDP per capita gain of 1000 dollars in a developing country leads to a rise in the hazard by 14%. Notice that for the very same country, being in the six-month period just preceding an election has a substantially greater effect, i.e, an increase in the hazard by 36%.[21]

5. Robustness checks

As shown, our baseline results mostly support our theoretical predictions, i.e., that leaders have specific incentives to adopt strategic-timing ratification behavior. In this next section, we study potential concerns about the validity of these predictions. This is done in two steps. First, we use alternative variables in order to ensure that our results are not sample-dependent. Second, we assess the relevance of alternative explanations that may partly explain or drive the results.

5.1. Relevant information

5.1.1. Who's democratic?

We initially chose the election competitiveness index from the DPI database to identify which countries can be considered democratic. Capturing the "free and fair" nature of elections, this index allows us to restrict our sample to countries where a leader's reelection can be credibly challenged.[22] Nevertheless, we now offer to rely on a broader definition of democracy and switch to the most widely used indicator of democracy provided by the Polity IV project. This variable is coded from -10 for the least democratic to 10 for the most democratic states. Relying on common practice, we restrict our sample only to observations that score a strictly positive value. The two indexes exhibit a rather moderate correlation coefficient of 0.65. This implies only

[21] Finally, note that excluding control variables does not significantly affect our results.

[22] That is to say cases for which leaders may have real incentives to behave strategically and therefore for which our theoretical mechanisms are actually relevant (as in Brender and Drazen, 2005).

marginal changes in the sample for OECD countries, but substantial changes for developing countries, since 11 countries were dropped from the sample when using Polity IV to identify democratic countries. Adopting this alternative criterion to select our sample, we replicate the last two columns of Table 3 and report results in the first two columns of Table 4.

[insert table 4 here]

Results remain unaffected by this change. They still suggest that OECD leaders tend to delay costly international cooperation decisions to the post-election period. Conversely, leaders of developing countries, benefiting notably from lower participation costs, are more prone to ratify just before elections in an attempt to reinforce their reelection prospects.

5.1.2. Who's the ratifier?

Until now we have considered the most relevant elections according to country regime types, that is, legislative (executive) elections for parliamentary (presidential) regimes. However, the authority of ratification may belong to a specific body, irrespective of the country's regime type. We now determine the relevant national election according to who is in charge of ratification. To do so, we rely on the work of Simmons (2009), who develops a classification to identify the ratifier, or more precisely, the institutional ratification process for a given country. A score of 1 to 3 is assigned to each country based on its respective constitution. The greater the score, the greater are the hurdles to executive willingness to ratify. A value of 1 means that the ratification decision relies exclusively on the chief executive, 1.5 means there is a rule or tradition for the executive to inform the legislative body of signed treaties, 2 that a majority consent from a legislative body is required, and 3 that a stricter consensus may be needed through a stronger majority or the approval of several legislative bodies.[23,24]

In the regressions reported in columns (3) and (4) of Table 4, we focus on executive elections for countries coded 1 and 1.5, and on legislative elections for the others.[25] Results are similar

[23] A score of 4 would correspond to a "national plebiscite" rule, but no country has adopted such a process.

[24] Interested readers may find more details in Appendix 3.2 (Ratification rules) of Beth Simmons' book.

[25] 1.5-score countries follow a "rule or tradition of informing the legislative body of signed treaties". Even if legislative assent is not requested, which body has a greater influence over this decision may be ambiguous. Moreover, as most countries concerned by this issue are parliamentary (Australia, Botswana, Canada, Egypt, New Zealand, Norway, the United Kingdom, but Malawi and Peru), the legislative power is likely to exert substantive

to the baseline ones; we simply remark that the probability of ratification in the six months before election in developing countries is even reinforced. More precisely, during this period, for developing countries the hazard is 45% higher than in other periods of the term. Finally, the last two columns of Table 4 combine the first two robustness checks. The two hypotheses drawn from the analytical framework are still supported.[26]

5.2. Alternative explanations

A second threat to the validity of our results is omitted variables. Is this section, we control for two important alternative explanations of the existence of opportunistic ratification cycles: economic conditions and partisan politics.

5.2.1. Economically driven cycles

In good economic times, a decision implying short-term costs versus long-term benefits, such as environmental protection, is easier to sell to the population. Thus, if leaders manage to boost the economy during the year preceding elections (Nordhaus, 1975), this may also create a favourable context for environmental cooperation and thus increase participation in the pre-electoral period. In particular, this scenario would bias and (partly) explain the result we found for developing countries. As mentioned in Section 2, evidence on the existence of such political business cycles is rather poorly conclusive. Nevertheless, it is important to ensure that it does not drive our results. We introduce the annual GDP growth rate for each country and present the results in column (1) and (2) of Table 5.[27]

We see that the growth variable is not significant and that the variables of interest are not affected by the introduction of the GDP growth rate. Ratification probability is still higher in the second semester after elections in OECD countries, and, more importantly, during the six-month period preceding elections in developing countries. To sum up, we show that the electoral ratification cycle we highlight is driven by political incentives and not economic forces.

control over the chief executive it has elected or appointed. However, classifying these countries in one of the two groups does not affect the main results (not reported but available).

[26] When we simultaneously use Polity IV to identify democratic countries and Beth Simmons' work to select the relevant elections, we observe a decrease in the probability to ratify an IEA during the second semester after an election for developing countries. This result is compatible with our predictions but we do not give it much importance since the associated coefficient is only weakly significant and does not statistically differ from 0 in any other regression we run.

[27] Growth rates are extracted from the World Bank Development Indicators database.

5.2.2. Opportunistic versus partisan cycles

We conclude by ensuring that our results are truly driven by strategic timing behavior on the part of leaders. The literature discusses two kinds of political cycles, namely partisan and opportunistic cycles. The theoretical mechanisms we develop in Section 2 clearly lie in the second category. However, we may imagine that the emergence of political cycles is actually led by the alternation of competing political parties in office and the difference of preferences between them. In that case, ratification in the post-electoral period would not reflect strategic timing in decision-making, but rather a (partisan) public policy that a party had wanted to implement for a long time, but had not had the power to achieve it sooner.[28]

To examine such a possibility, we construct a variable "Newparty" taking the value of 1 for terms characterized by political party alternation following an election, and 0 otherwise.[29] Since only OECD countries exhibit positive post-electoral cycles, we focus on this sub-sample of countries.[30] We use successively the regime type and the ratifier affiliations to determine which relevant kind of election to focus on for each country. Results are reported in columns (3) to (8) of Table 5.

[insert table 5 here]

The results in column (3) suggest that a change in party leader implies a lower intensity level of cooperation all along the related term. This finding is, however, not robust and seems to be explained by the absence of the "Post_S1*newparty" interaction term that exhibits a strong effect in the other regressions. The subsequent estimates indicate that a change of the party in office has a negative effect on the ratification probability of an OECD country during the six months following an election. This finding may appear to be consistent with the "transition period" hypothesis. Yet, why it occurs only in the case of change in the leading party is still puzzling. Furthermore, the magnitude of the coefficient impels us to dedicate attention to this

[28] This mechanism is well illustrated by the New-Zealand Government's ratification of the Kyoto Protocol (Yang, 2004) that occurred after the 2002 election, won by the pro-ratification labour-led party, which was opposed the conservative party.

[29] To do so, we use election dates to delimitate mandates and the variable "PRTYIN" from DPI, that indicates how long the chief executive's party has been in office, to identify changes in the party in power.

[30] It would be pointless to study partisan driven pre-electoral cycles, i.e., effects of political party changes before they actually occur.

result. The hazard is 60% lower in the first semester after an election, which is quite substantial. Meanwhile, the coefficient associated with the "Post_S2" variable, indicating effects related to the second semester after elections for parties remaining in power, is still above one and significant. This means that reelected or reappointed chief executives - and even new ones belonging to the same party as the previous incumbent - tend to ratify more during the second half of the term's first-year.

Taken together, these findings reveal that new leaders (or administrations) are not prone to engage themselves rapidly in IEAs once in power but rather tend to reduce their participation in the beginning of their terms, whereas renewed administrations are likely to increase participation.[31] These results echo back to the recent work of Brender and Drazen (2013) in which the authors show that new leaders tend to delay policy changes. In particular, the authors argue that leaders may face a learning curve in both the exercise of power and the discernment of population preferences. Thus new leaders may be reluctant to ratify treaties during the first year of their term and more prone to do so over the medium-term. This interpretation is consistent with the fact that "Newparty" is not significant, indicating that on average new and reelected leaders do not significantly differ in their cooperation behavior over the duration of their terms.

To summarize, it appears that the post-electoral cycle highlighted in OECD countries is attributable to opportunistic behavior from leaders rather than to partisan politics, and thus, are due to strategic-timing in reform adoption.

6. Conclusion

Elections are acknowledged as one of the most prominent political factors affecting a leader's behavior. Yet, to our knowledge no paper has studied the ways in which the electoral calendar affects international environmental cooperation. We attempt to fill this gap by assessing when leaders are more likely to ratify IEAs. Estimating a duration model with time-varying covariates, we show that elections appear to impact ratification timing. Economic and political costs induced by IEA commitments push OECD country incumbents to delay ratification until after an election in order not to deter their reelection prospects. Due to an institutional transition period, the

[31] During the first and second semester after an election, respectively.

commitment peak is observed during the second post-election semester. By contrast, developing countries benefit from preferential treatment that both reduces costs and increases gains of IEA participation. Therefore, leaders of developing countries tend to use ratification as a pre-electoral tool to boost their chances to stay in office. We find this effect to be apparent in the last six-month period preceding an election. These findings appear to be substantial and robust, and are found using an empirical strategy that allows clear identification of pre- and post- electoral periods.

These results deepen our understanding of international cooperation and offer some avenues to enhancing it. First, these results could help stakeholders such as international organizations or NGOs to target periods during which leaders are in a better position to support their requests. Second, while our paper focuses on the ratification stage, its conclusions may serve to determine the optimal time to organize international conferences and summits. Treaties are drafted during this upstream stage making it crucial for their success. Naturally, since the timing of national elections across the world are independent it is highly unlikely that one point in time would correspond to the optimal period for all leaders. However, some points in time are more likely than others to be suitable, if they put more countries or key countries in the position sought. Furthermore, this will be easier in regional and even bilateral agreements. All these points open avenues for applications, as well as for further research aimed at enhancing environmental policies and international cooperation.

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Appendix A: List of treaties

Treaty name	Year of opening for ratification	Year of entry into force	Nb parties
Convention Concerning Minimum Standards in Merchant Ships (No. 147)	1976	1981	20
Convention on Limitation of Liability for Maritime Claims	1976	1986	18
Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Techniques	1976	1978	28
Protocol to the International Convention on Civil Liability for Oil Pollution Damage	1976	1981	24
Protocol to the International Convention on the Establishment of an International Fund of Compensation for Oil Pollution Damage	1976	1994	19
Convention concerning the Protection of Workers against Occupational Hazards in the Working Environment due to Air Pollution	1977	1979	17
International Convention for the Safety of Fishing Vessels	1977		10
Convention of the Carriage of Goods by Sea	1978	1992	3
International Convention for the Prevention of Pollution from Ships (MARPOL) - Annex IV (Optional): Sewage	1978	-	30
International Convention for the Prevention of Pollution from Ships Hazardous substances carried in packaged form	1978	1992	39
International Convention on Standards of Training Certification and Watchkeeping for Seafarers	1978	1984	48
Protocol relating to the International Convention for the Safety of Life at Sea (SOLAS Prot.)	1978	1981	32
Constitution of the United Nations Industrial Development Organization	1979	1985	44
Convention on the Conservation of Migratory Species of Wild Animals	1979	1983	32
Convention on the Physical Protection of Nuclear Material	1979	1987	30
United Nations Convention on the Law of the Sea	1982	1994	48
International Tropical Timber Agreement (Geneva 1983)	1983	1985	30
Statutes of the International Centre for Genetic Engineering and Biotechnology	1983	1994	22
Convention for the Protection of the Ozone Layer	1985	1988	72
Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency	1986	1987	38
Convention on Early Notification of a Nuclear Accident	1986	1987	42
Protocol on Substances that Deplete the Ozone Layer	1987	1989	72
Joint Protocol relating to the application of the Vienna Convention and the Paris Convention	1988	1992	11
Protocol relating to the International Convention for the Safety of Life at Sea (SOLAS PROT 1988)	1988	-	16
Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	1989	1992	71
International Convention on Salvage	1989	1996	15
International Convention on Oil Pollution Preparedness Response and Cooperation	1990	1995	27

Convention on Environmental Impact Assessment in a Transboundary Context	1991	1997	18
International Convention for the Protection of New Varieties of Plants (consolidated version)	1991	1998	9
Convention on Biological Diversity	1992	1993	82
Convention on Transboundary Effects of Industrial Accidents	1992	-	8
United Nations Framework Convention on Climate Change	1992	1994	84
Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas	1993	-	6
Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction	1993	1997	69
Protocol to the International Convention for the Safety of Fishing Vessels	1993	-	3
Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982	1994	1996	47
Convention on Nuclear Safety	1994	1996	34
International Convention to Combat Desertification in those Countries Experiencing Serious Drought and or Desertification	1994	1996	81
International Tropical Timber Agreement (Geneva 1994)	1994	1997	27
Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks	1995	-	6
Comprehensive Nuclear Test - Ban Treaty	1996		32
International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea	1996	-	0
Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter	1996	-	4
Convention on Supplementary Compensation for Nuclear Damage	1997	-	0
Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	1997	-	4
Kyoto Protocol to the United Nations Framework Convention on Climate Change	1997	-	3
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	1998	-	0
International Convention on Arrest of Ships	1999	-	0

Appendix B: List of countries

Country name	dpi	BS	Country name	dpi	BS	Country name	dpi	BS
Albania	2	2	Ethiopia	2	2	Nicaragua	1	2
Algeria	1	1	Finland*	2	2	Niger	1	1
Angola	1	2	France*	2	2	Nigeria	1	2
Argentina	1	2	Gabon	1	2	Norway*	2	1
Australia*	2	1	Gambia	1	2	Pakistan	2	1
Austria*	2	2	Ghana	1	2	Panama	1	2
Azerbaijan	1	2	Greece*	2	2	Paraguay	1	2
Bangladesh	2	2	Guatemala	1	1	Peru	1	1
Belgium*	2	2	Guinea	1	2	Philippines	1	2
Benin	1	1	Honduras	1	2	Poland*	1	2
Bolivia	1	2	Hungary*	2	2	Portugal*	2	2
Botswana	2	1	India	2	1	Romania	2	2
Brazil	1	2	Indonesia	2	2	Senegal	1	1
Bulgaria	2	2	Ireland*	2	2	Sierra leone	1	2
Burkina faso	1	1	Israel*	1	2	South africa	2	1
Burundi	1	1	Italy*	2	2	Spain*	2	2
Cambodia	2	2	Japan*	2	2	Sri lanka	1	1
Cameroon	1	2	Kenya	1	1	Sudan	1	2
Canada*	2	1	Latvia	2	2	Sweden*	2	2
Central african republic	1	2	Lesotho	2	1	Switzerland*	2	2
Chad	1	2	Liberia	1	2	Tanzania	1	1
Chile	1	2	Madagascar	1	1	Thailand	2	1
Colombia	1	2	Malawi	1	1	Togo	2	1
Congo	1	2	Malaysia	2	2	Turkey	2	2
Costa rica	1	2	Mali	1	1	Uganda	1	2
Cote d'ivoire	1		Mauritania	1	2	United kingdom*	2	1
Denmark*	2	2	Moldova	1	2	United states*	1	2
Djibouti	1	2	Mongolia	1	2	Uruguay	1	2
Dominican republic	1	2	Mozambique	1	2	Venezuela	1	2
Mexico	1	2	Namibia	1	2	Yemen	2	2
Ecuador	1	2	Nepal	2	2	Zambia	1	1
Egypt	2	1	Netherlands*	2	2	Zimbabwe	2	1
El salvador	1	2	New zealand*	2	1			

Notes: A "" associated with a country name means that it is a member of the OECD in 1999. A value of 1 means the presidential election was relevant while 2 means the legislative election was relevant, according to the World Bank (column "dpi") or the work of Beth Simmons (column "BS"). This information is valid for the year 1999 too.*

Appendix C: Example of database construction

Remark that the construction of the four six-month dummies implies a change in the value of covariates every 6 months before and after an election. To clearly see the implications for the database construction and the methodological contribution it allows, let us take an example. We observe a country c, ratifying a treaty a. The analysis starts on January 1^{st} 1976 (day 0). There is an election in this country on the the July 24^{th} 1980 (day 1600). The country ratifies on the November 27^{th} 1981 (day 2156). This leads to the set of observations presented in the following Table for this case.

Database construction example

year	day_start	day_end	ratif.	Pre_S2	Pre_S1	Post_S1	Post_S2	GDPpc
1976	0	365	0	0	0	0	0	1000
1977	365	730	0	0	0	0	0	900
1978	730	1095	0	0	0	0	0	1100
1979	1095	1235	0	0	0	0	0	1150
1979	1235	1460	0	1	0	0	0	1150
1980	1460	1518	0	1	0	0	0	1160
1980	1518	**1600**	0	0	1	0	0	1160
1980	**1600**	1782	0	0	0	1	0	1160
1980	1782	1825	0	0	0	0	1	1160
1981	1825	1965	0	0	0	0	1	1200
1981	1965	**2156**	1	0	0	0	0	1200

Tables

Table 3: IEAs ratification determinants (Cox PH model) - Main results

	Year dummies			*Semester Dummies*		
	Whole sample	OECD	DCs	Whole sample	OECD	DCs
	(1)	(2)	(3)	(4)	(5)	(6)
Pre_365	1.119*	1.121	1.214**	-	-	-
	(0.067)	(0.103)	(0.092)			
Post_365	0.991	1.173	0.865	-	-	-
	(0.069)	(0.102)	(0.098)			
Pre_S2	-	-	-	1.063	1.152	1.082
				(0.086)	(0.130)	(0.122)
Pre_S1	-	-	-	1.177*	1.092	1.356***
				(0.085)	(0.133)	(0.115)
Post_S1	-	-	-	0.908	1.013	0.877
				(0.092)	(0.139)	(0.129)
Post_S2	-	-	-	1.077	1.312**	0.865
				(0.085)	(0.121)	(0.128)
GDPpc	1.051***	1.016	1.141***	1.051***	1.017	1.142***
	(0.007)	(0.017)	(0.049)	(0.007)	(0.016)	(0.049)
Polity	1.032***	0.884	1.01	1.033***	0.886	1.01
	(0.011)	(0.138)	(0.012)	(0.011)	(0.137)	(0.012)
Trade	0.999	1.002	0.997	0.999	1.002	0.997
	(0.002)	(0.004)	(0.002)	(0.002)	(0.004)	(0.002)
Nb. Obs.	52,307	14,688	37,619	66,247	19,136	47,111
Nb. Countries	98	23	75	98	23	75
Nb. Events	1,375	605	770	1,375	605	770

*Notes: Cox PH estimations with frailty shared at the country level and stratification of the baseline hazard by treaties. ***=significant at the 1% level, **=significant at the 5% level, *=significant at the 10% level. Standard errors associated with the reported hazard ratios are in parentheses.*

Table 4: IEAs ratification determinants (Cox PH model) - Relevant information

	Polity IV		*Ratifiers' elections*		*Polity IV & Ratifiers' elections*	
	OECD	DCs	OECD	DCs	OECD	DCs
	(1)	(2)	(3)	(4)	(5)	(6)
Pre_S2	1.144	1.132	1.151	1.190	1.149	1.240
	(0.129)	(0.135)	(0.143)	(0.124)	(0.142)	(0.136)
Pre_S1	1.107	1.339**	0.826	1.447***	0.945	1.478***
	(0.132)	(0.127)	(0.152)	(0.119)	(0.151)	(0.127)
Post_S1	1.022	0.888	0.888	0.916	0.900	0.960
	(0.138)	(0.142)	(0.155)	(0.138)	(0.154)	(0.148)
Post_S2	1.311**	0.942	1.304**	0.811	1.311**	0.731*
	(0.120)	(0.141)	(0.130)	(0.139)	(0.130)	(0.048)
GDPpc	1.017	1.177***	1.017	1.134**	1.016	1.165***
	(0.016)	(0.047)	(0.016)	(0.052)	(0.016)	(0.048)
Polity	0.923	1.028	0.901	1.017	0.935	1.028
	(0.108)	(0.028)	(0.138)	(0.012)	(0.109)	(0.028)
Trade	1.001	0.998	1.002	0.998	1.001	0.998
	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
Nb. Obs.	19237	37044	17404	45386	17534	36219
Nb. Countries	23	64	23	76	23	64
Nb. Events	608	601	605	762	608	601

*Notes: ***=significant at the 1% level, **=significant at the 5% level, *=significant at the 10% level. Standard errors associated with the reported hazard ratios are in parentheses. Columns (1), (2) and (3) present estimation of a Cox proportional hazard model on a sample of democratic countries. In columns (4), (5) and (6), the Cox model is stratified by treaty and a frailty term shared at the country level is introduced.*

Table 5: IEAs ratification determinants (Cox PH model) - Alternative explanations

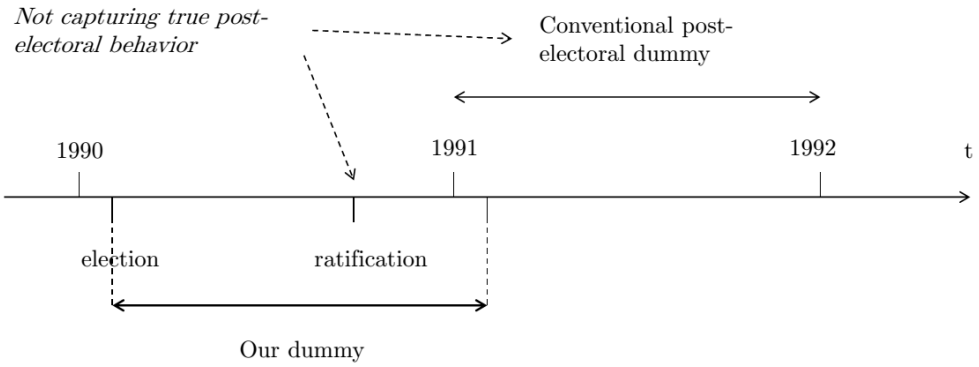
	Growth		*Party change - Regimes' elections*			*Party Change - Ratifiers' elections*		
	OECD	DCs	*OECD countries*			*OECD countries*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Pre_S1	1.091	1.379***	1.052	1.057	1.060	0.947	0.947	0.952
	(0.133)	(0.115)	(0.137)	(0.137)	(0.137)	(0.157)	(0.157)	(0.157)
Pre_S2	1.154	1.098	1.113	1.115	1.123	1.126	1.117	1.132
	(0.130)	(0.122)	(0.135)	(0.134)	(0.135)	(0.149)	(0.149)	(0.149)
Post_S1	1.014	0.892	0.924	1.231	1.251	0.768	1.082	1.110
	(0.139)	(0.129)	(0.149)	(0.170)	(0.171)	(0.172)	(0.195)	(0.196)
Post_S2	1.313***	0.884	1.345**	1.282**	1.140**	1.391**	1.279*	1.456**
	(0.121)	(0.128)	(0.151)	(0.126)	(0.152)	(0.166)	(0.139)	(0.167)
Post_S1*newparty	-	-	-	0.407***	0.380***	-	0.355***	0.319***
				(0.322)	(0.329)		(0.369)	(0.378)
Post_S2*newparty	-	-	0.931	-	0.778	0.848	-	0.687
			(0.252)		(0.258)	(0.277)		(0.283)
Newparty	-	-	0.756**	0.853	0.912	0.945	1.051	1.175
			(0.132)	(0.127)	(0.143)	(0.153)	(0.143)	(0.164)
GDPpc	1.018	1.136***	1.015	1.014	1.014	1.015	1.015	1.015
	(0.016)	(0.051)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Polity	0.930	1.015	0.864	0.865	0.869	0.867	0.871	0.879
	(0.158)	(0.012)	(0.141)	(0.141)	(0.141)	(0.141)	(0.141)	(0.141)
Trade	1.003	0.998	1.001	1.001	1.001	1.001	1.001	1.001
	(0.004)	(0.002)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Growth	0.977	1.005	-	-	-	-	-	
	(0.026)	(0.007)						
Nb. Obs.	19,048	47,587	18,116	18,116	18,116	18,745	18,745	18,745
Nb. Countries	23	75	23	23	23	23	23	23
Nb. Events	602	773	569	569	569	569	569	569

*Notes: ***=significant at the 1% level, **=significant at the 5% level, *=significant at the 10% level. Standard errors associated with the reported hazard ratios are in parentheses. Columns (1), (2) and (3) present estimation of a Cox proportional hazard model on a sample of democratic countries. In columns (4), (5) and (6), the Cox model is stratified by treaty and a frailty term shared at the country level is introduced.*

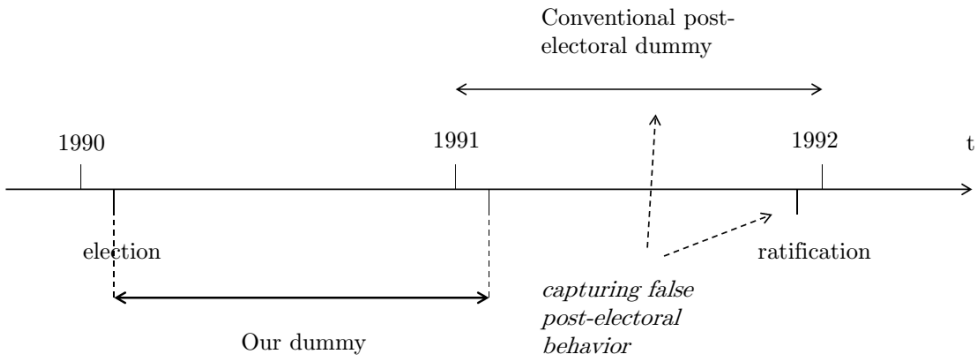
Figures

Figure 1: Identification gains

Case 1: election Jan. 15, 1990, ratification Nov. 15, 1990.



Case 2: election Jan. 15, 1990, ratification Dec. 15, 1991.



Case 3: election Jan. 15, 1990, ratification Nov. 15, 1990.